THE BIOGEOGRAPHY OF FERMENTATIVE YEAST POPULATIONS FROM THE VINEYARDS OF THE AZORES ARCHIPELAGO

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AIMS

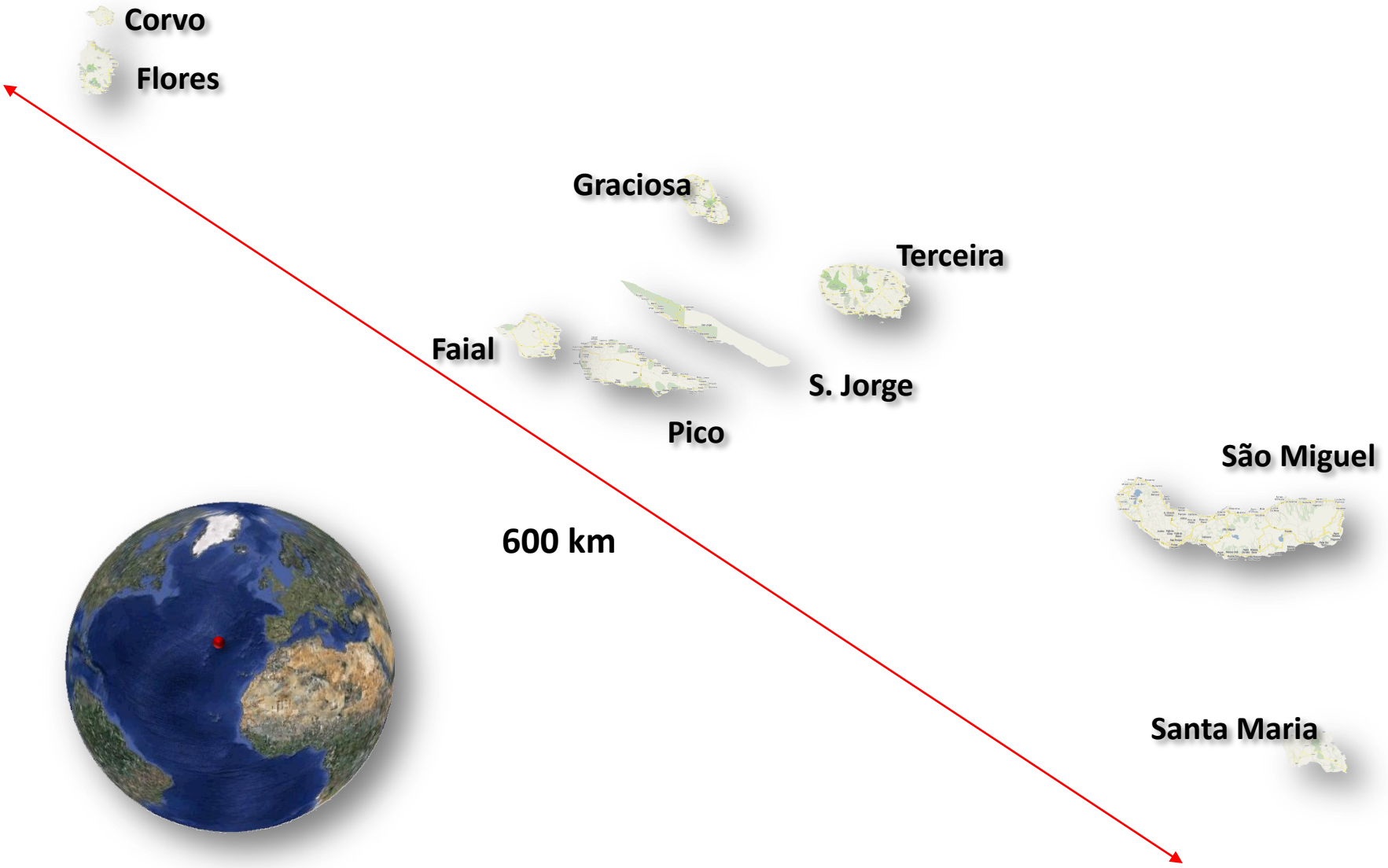
- Evaluate the biogeography of the fermentative yeast flora from the vineyards of the Azores Archipelago

- To build a *Saccharomyces cerevisiae* strain collection for

  - Preservation of yeast genetic diversity
  - Equitable sharing of genetic data
  - Selection and improvement of wine strains

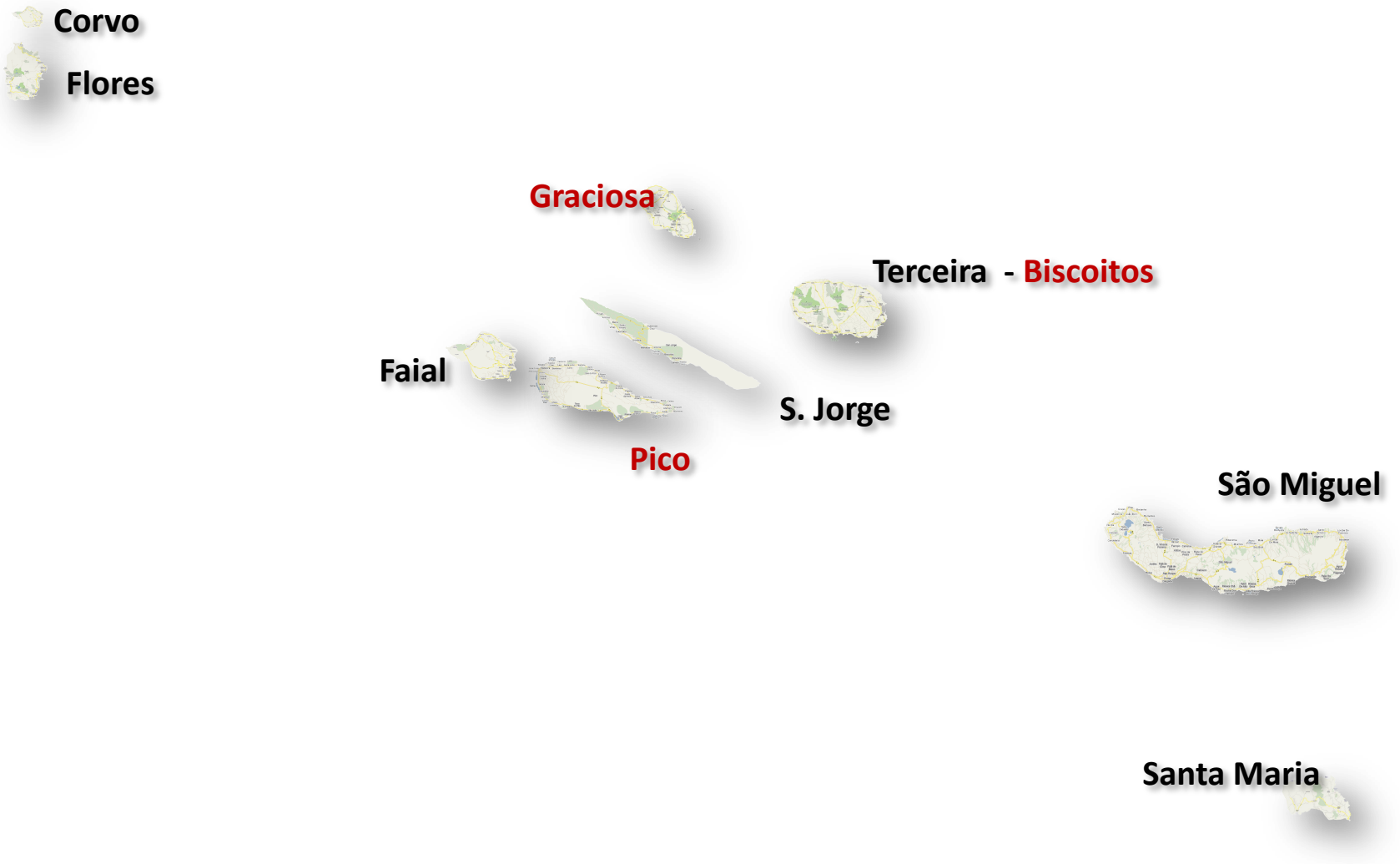
INTRODUCTION

Azores Archipelago



INTRODUCTION

Azores Archipelago

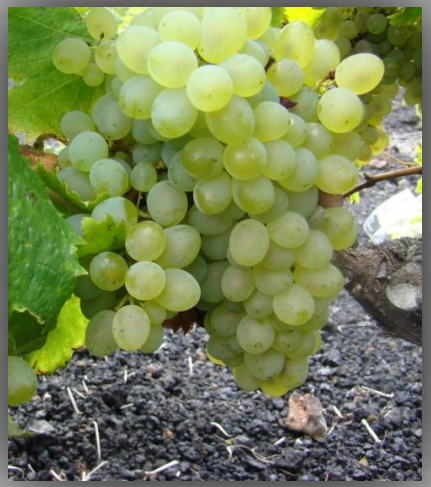


Non-abandonned vineyards

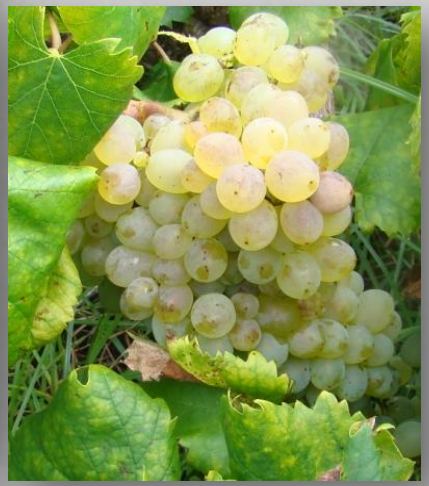
Abandonned vineyards

Traditional varieties

Verdelho



Arinto



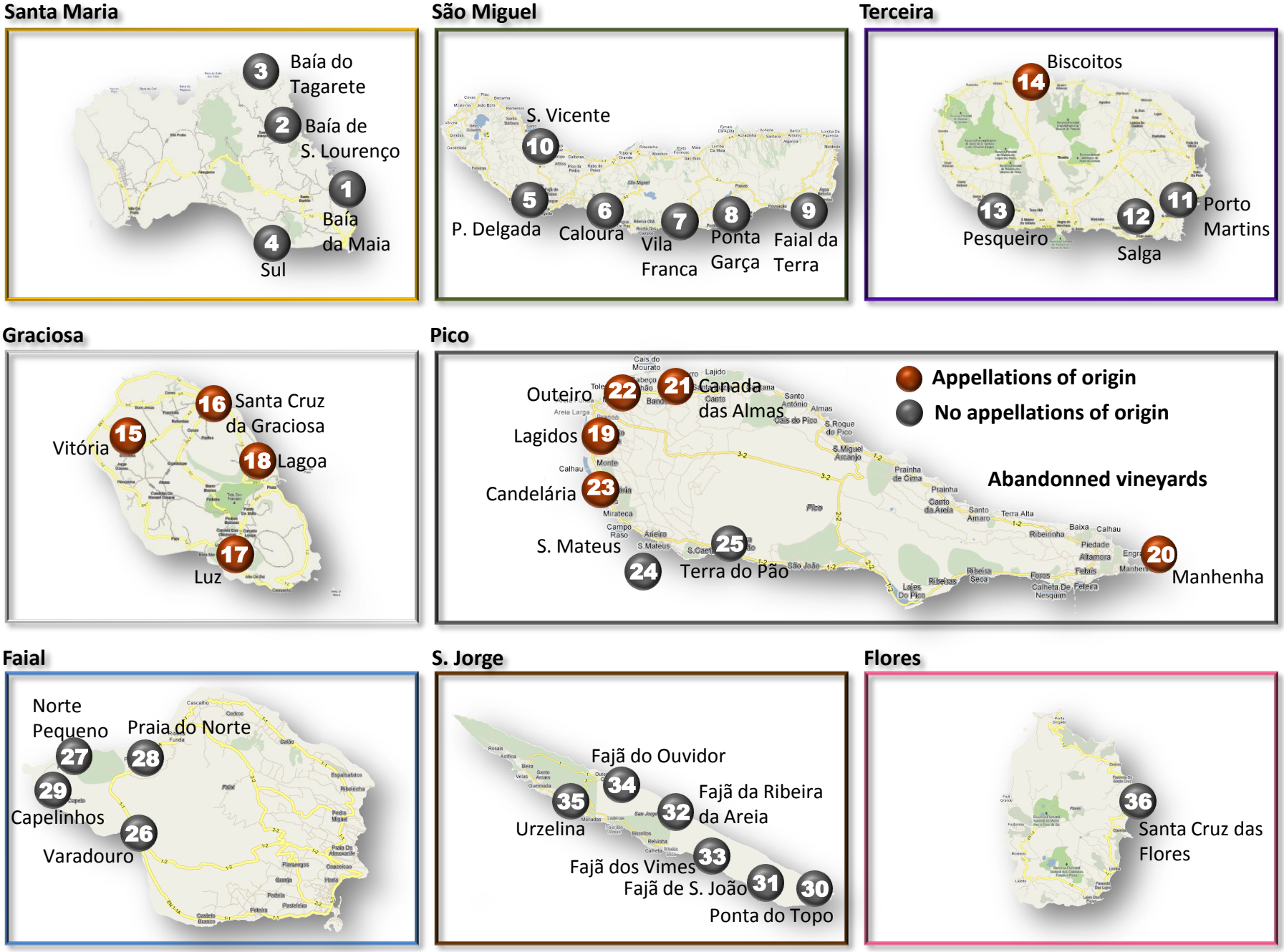
Terrantez

Hybrid varieties

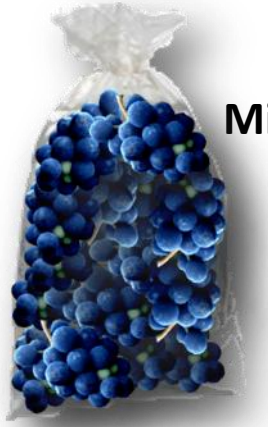
(American varieties)

MATERIAL AND METHODS

SAMPLING LOCATIONS



MATERIAL AND METHODS

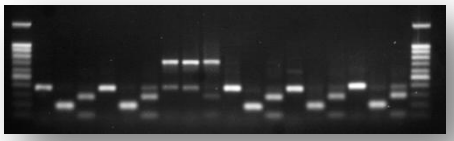


Microvinification

Isolation

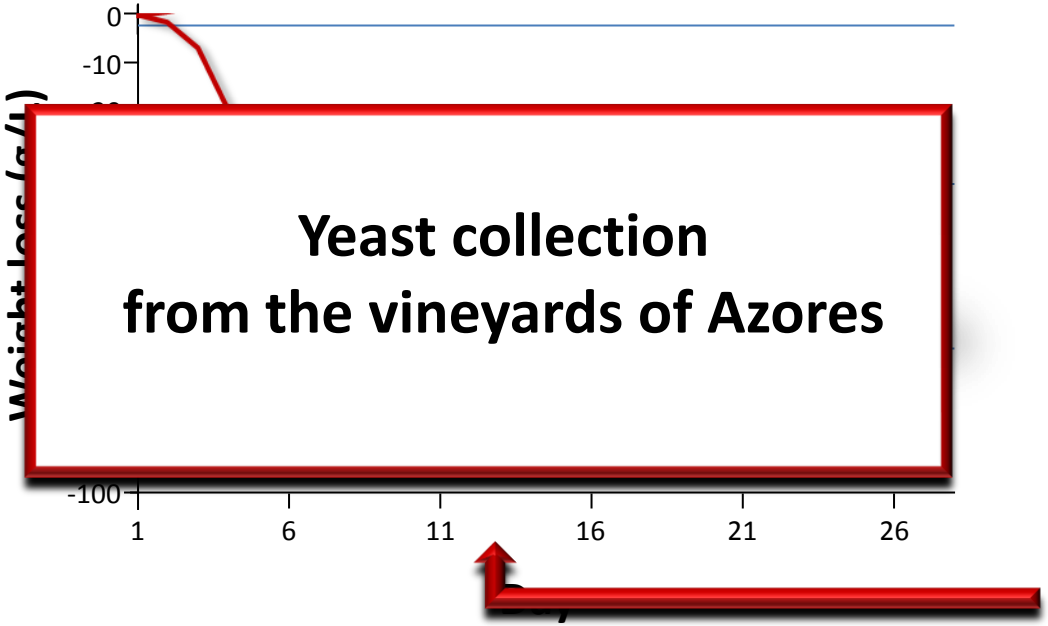
Species identification

ITS-RFLP



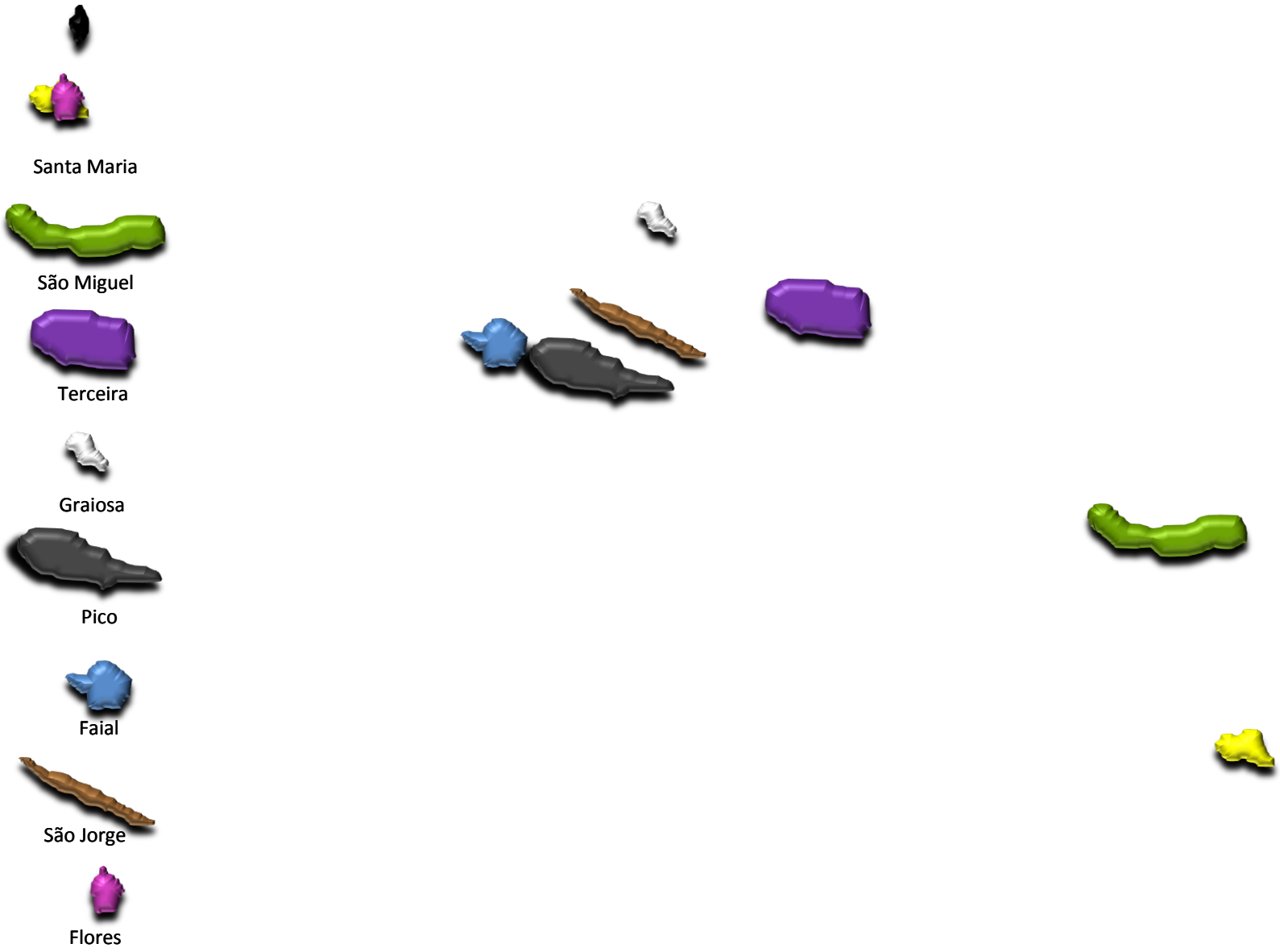
S. cerevisiae strains identification

Interdelta Sequences

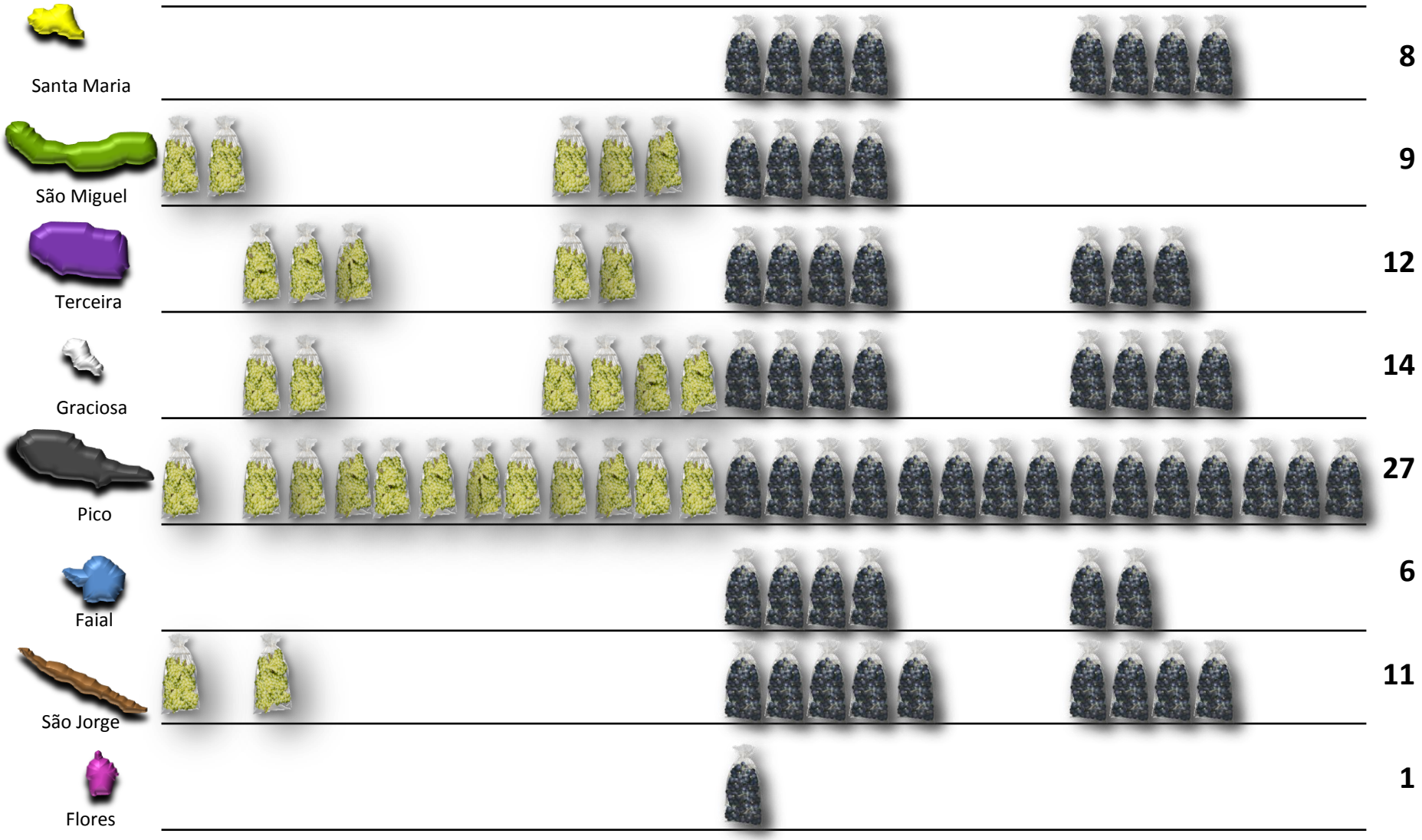


Yeast collection from the vineyards of Azores

MATERIAL AND METHODS



MATERIAL AND METHODS



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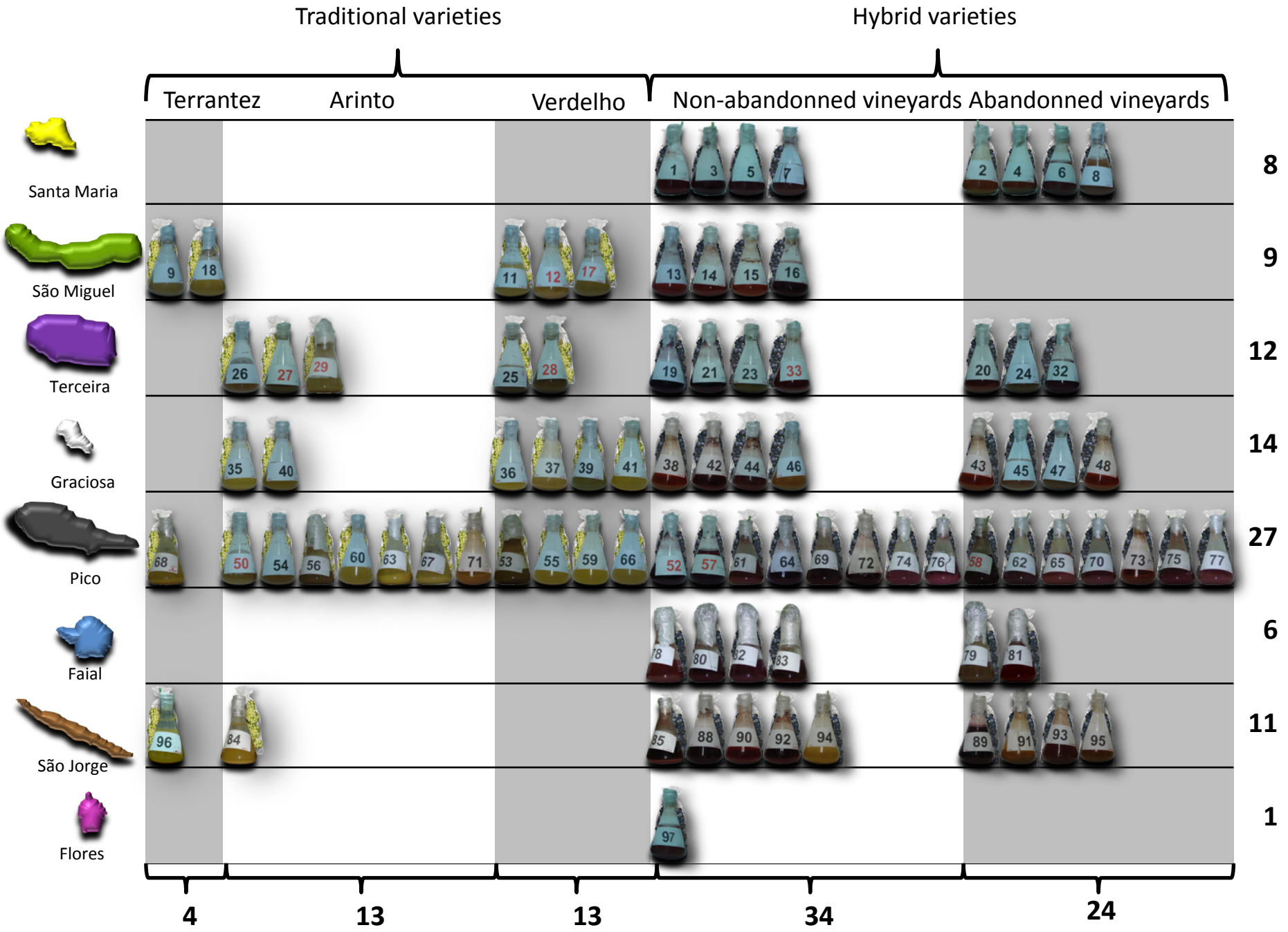


RESULTS

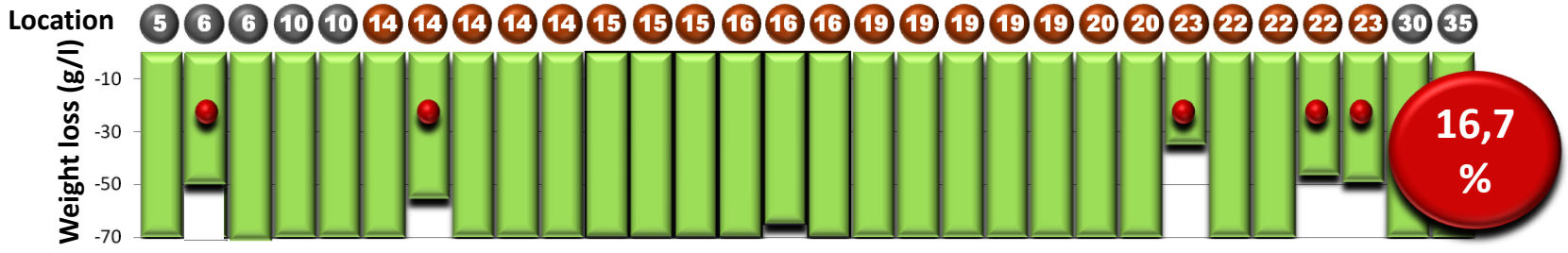
FERMENTATION

	Fermentation onset (day)	Fermentation duration (day)
Traditional varieties	2,3	18,6
Hybrid varieties in non- abandonned vineyards	2,4	29,3
Hybrid varieties in abandonned vineyards	2,0	25,9

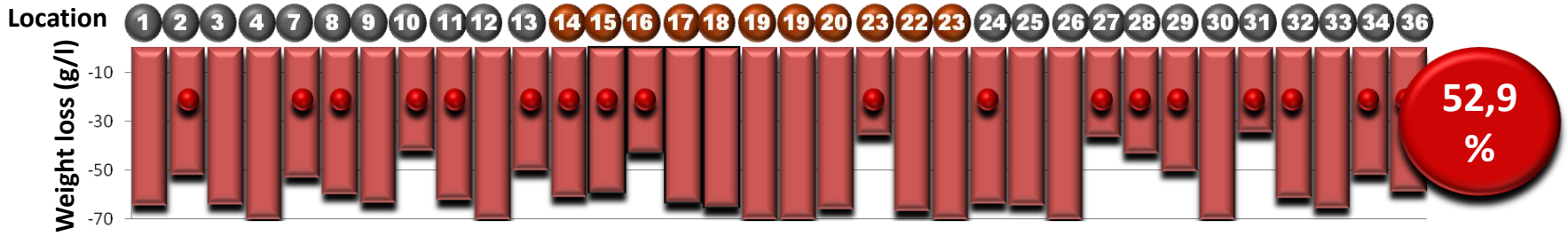
RESULTS

Summary of all spontaneous fermentations

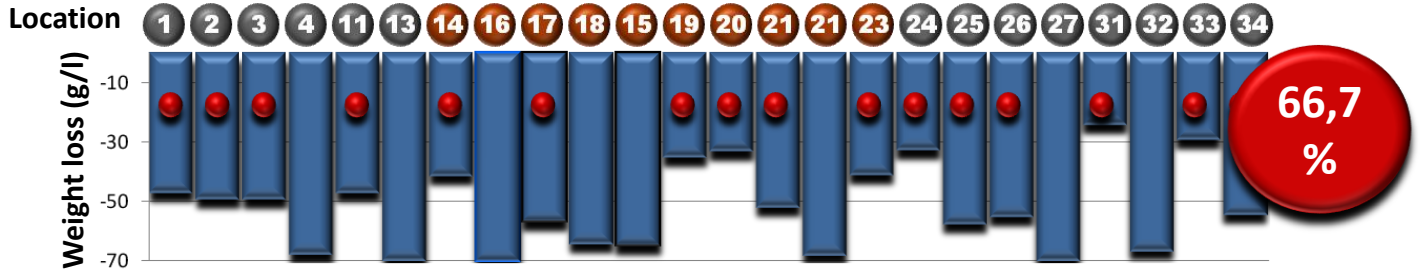
SAMPLES OF TRADITIONAL VARIETIES



SAMPLES OF HYBRID VARIETIES FROM NON-ABANDONED VINEYARDS



SAMPLES OF HYBRID VARIETIES FROM ABANDONED VINEYARDS

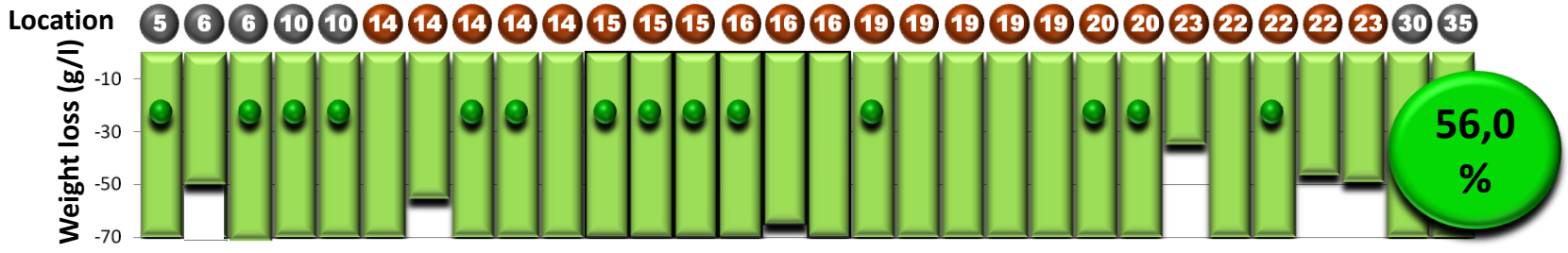


- Unfinished fermentations
- Samples from other winemaking regions
- Samples from appellations of origin

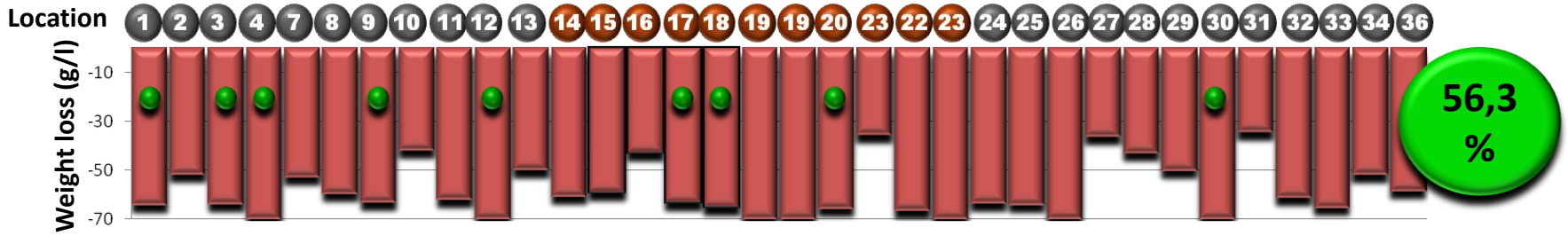
RESULTS

Summary of all spontaneous fermentations

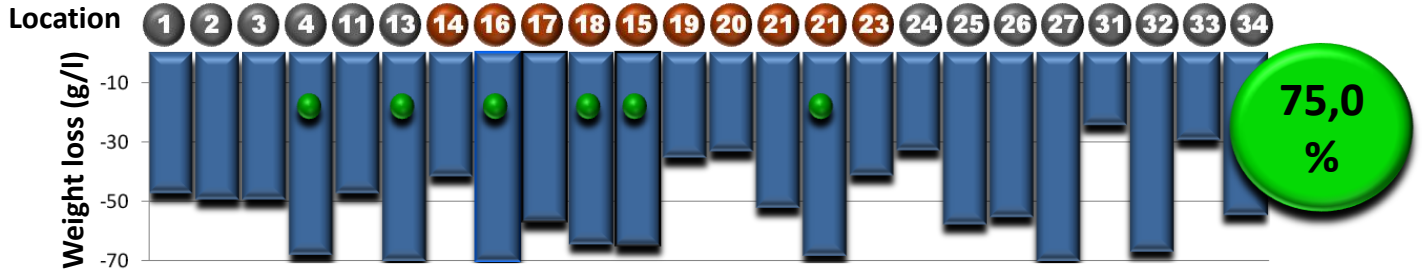
SAMPLES OF TRADITIONAL VARIETIES



SAMPLES OF HYBRID VARIETIES FROM NON-ABANDONED VINEYARDS



SAMPLES OF HYBRID VARIETIES FROM ABANDONED VINEYARDS



Fermentations completed by *S. cerevisiae*

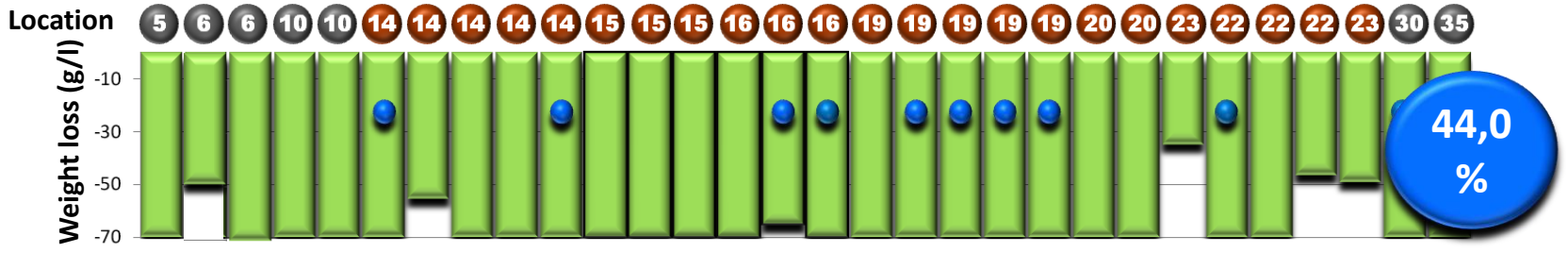
Samples from other winemaking regions

Samples from appellations of origin

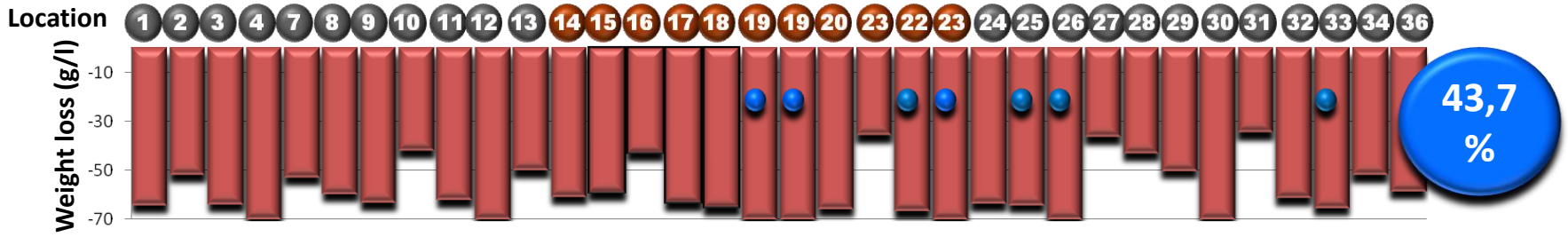
RESULTS

Summary of all spontaneous fermentations

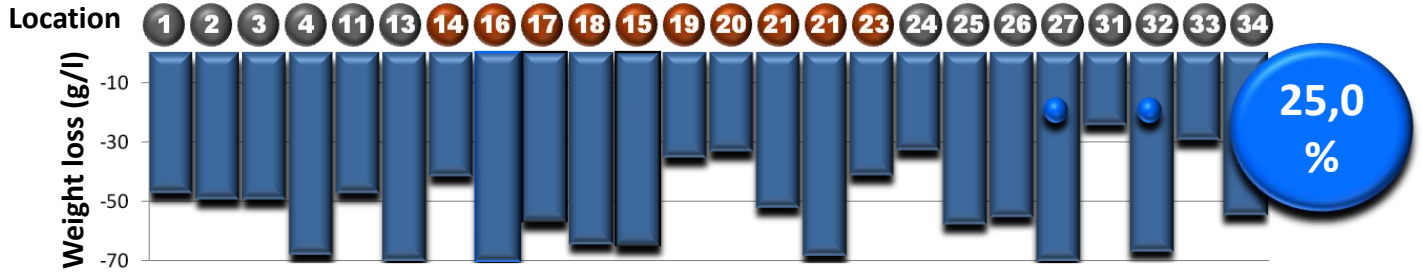
SAMPLES OF TRADITIONAL VARIETIES



SAMPLES OF HYBRID VARIETIES FROM NON-ABANDONED VINEYARDS



SAMPLES OF HYBRID VARIETIES FROM ABANDONED VINEYARDS

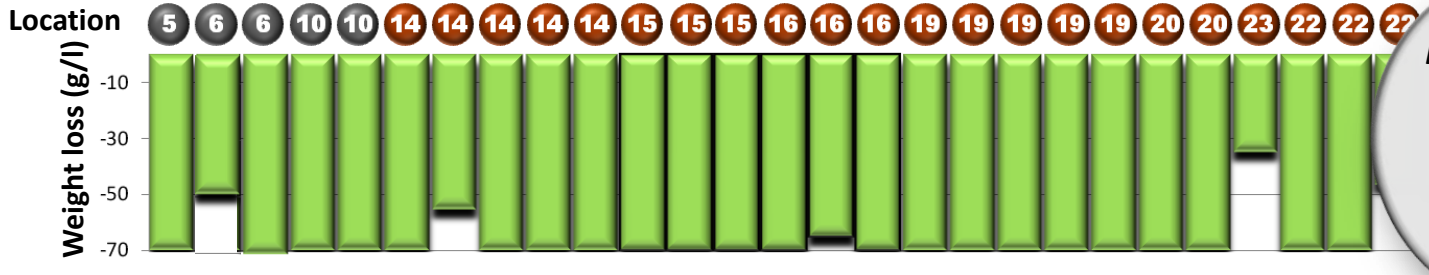


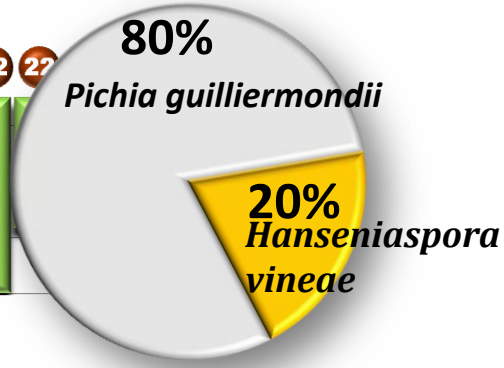
- Fermentations completed by non-*Saccharomyces* species
- Samples from other winemaking regions
- Samples from appellations of origin

RESULTS

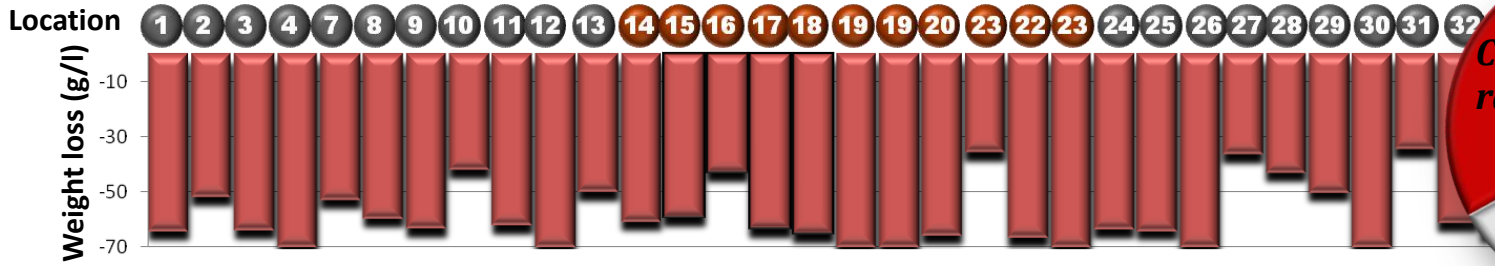
Summary of all spontaneous fermentations

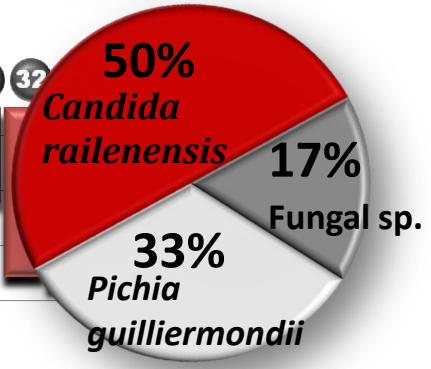
SAMPLES OF TRADITIONAL VARIETIES



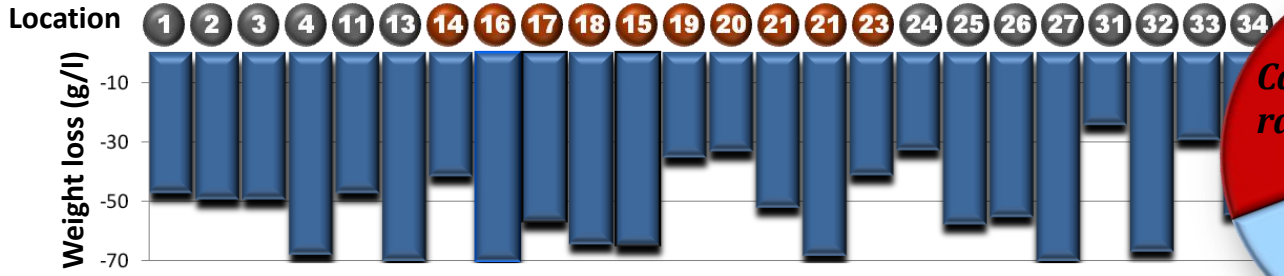


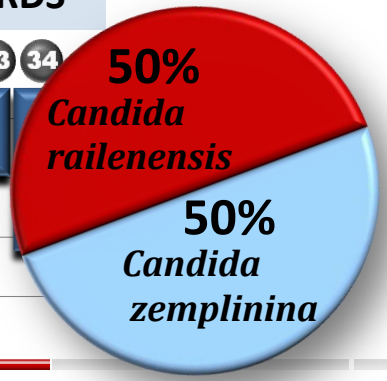
SAMPLES OF HYBRID VARIETIES FROM NON-ABANDONED VINEYARDS





SAMPLES OF HYBRID VARIETIES FROM ABANDONED VINEYARDS

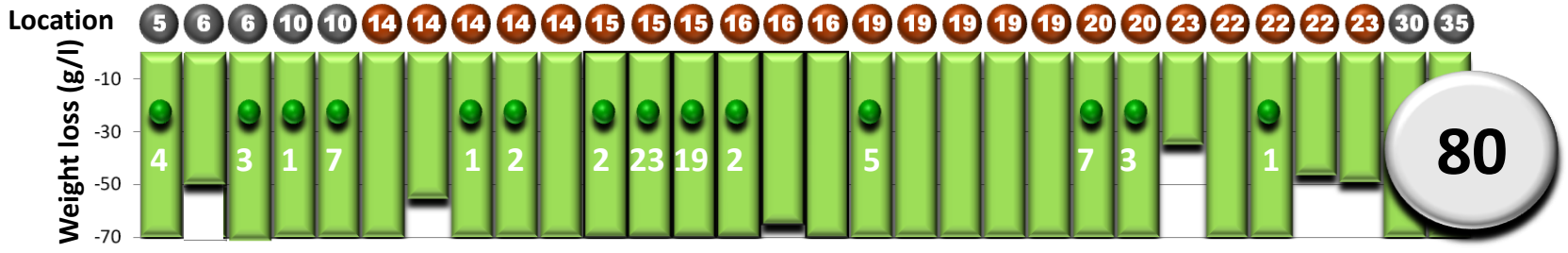




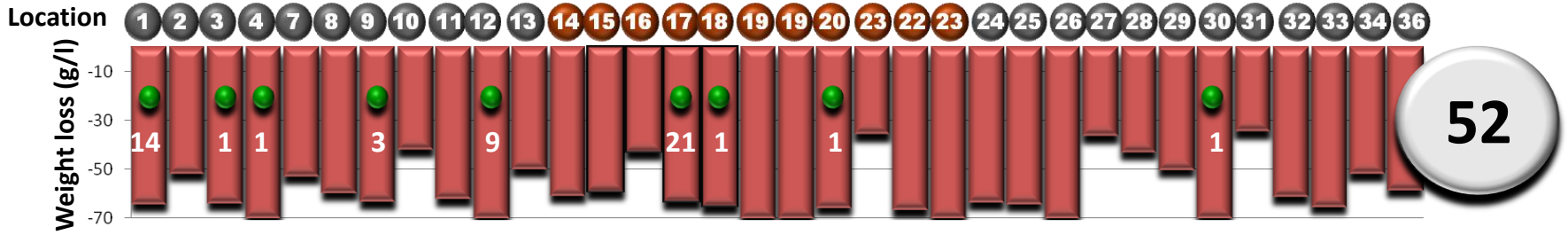
RESULTS

Number of *S. cerevisiae* strains involved in spontaneous fermentations

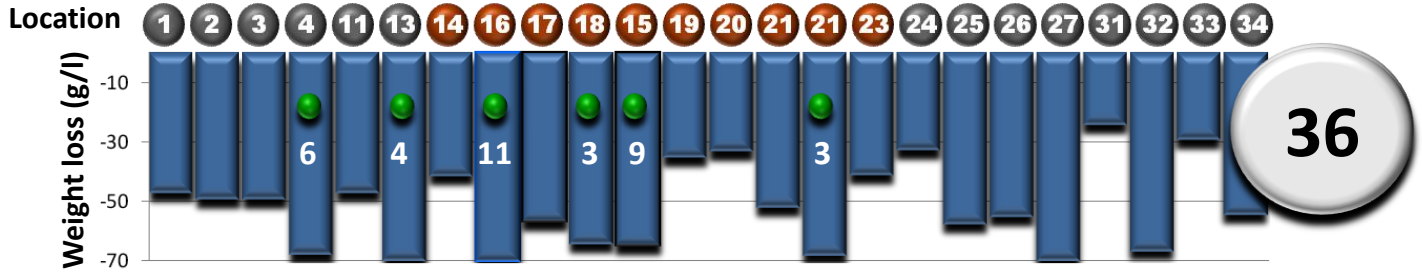
SAMPLES OF TRADITIONAL VARIETIES



SAMPLES OF HYBRID VARIETIES FROM NON-ABANDONED VINEYARDS



SAMPLES OF HYBRID VARIETIES FROM ABANDONED VINEYARDS



Fermentations completed by *S. cerevisiae*

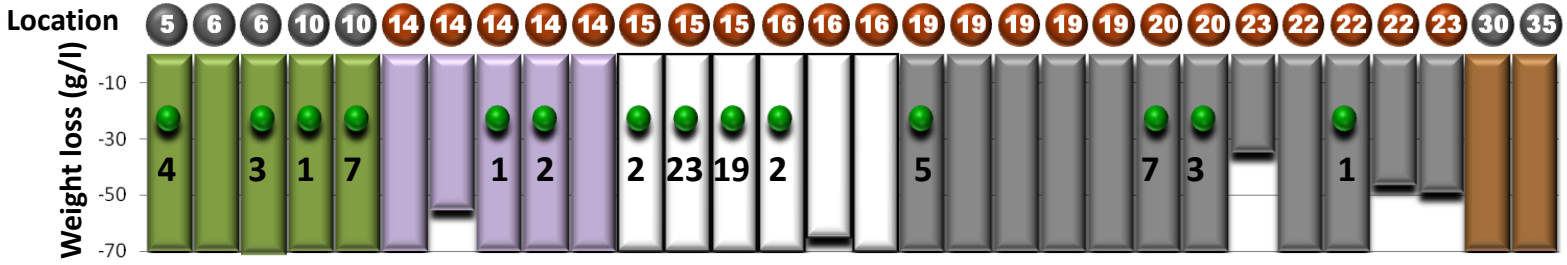
Samples from other winemaking regions

Samples from appellations of origin

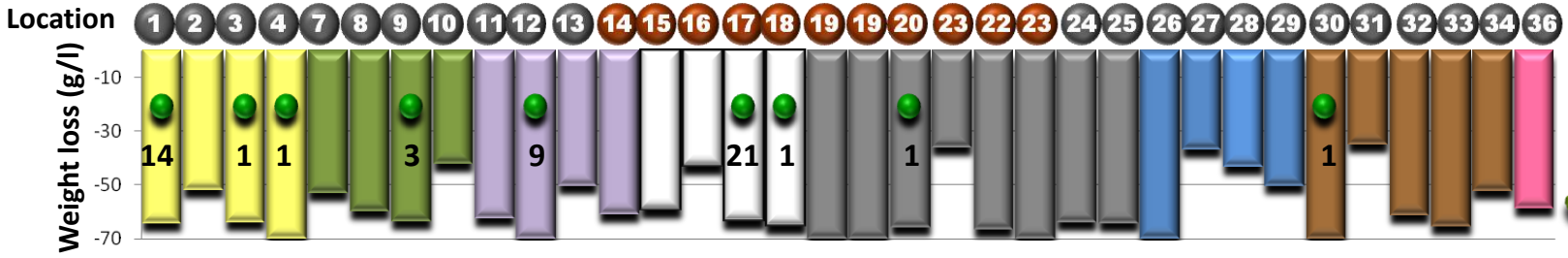
RESULTS

Number of *S. cerevisiae* strains from each island

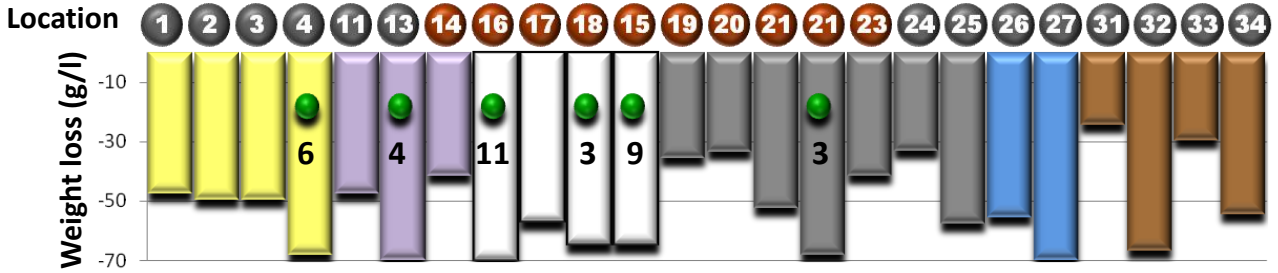
SAMPLES OF TRADITIONAL VARIETIES



SAMPLES OF HYBRID VARIETIES FROM NON-ABANDONED VINEYARDS



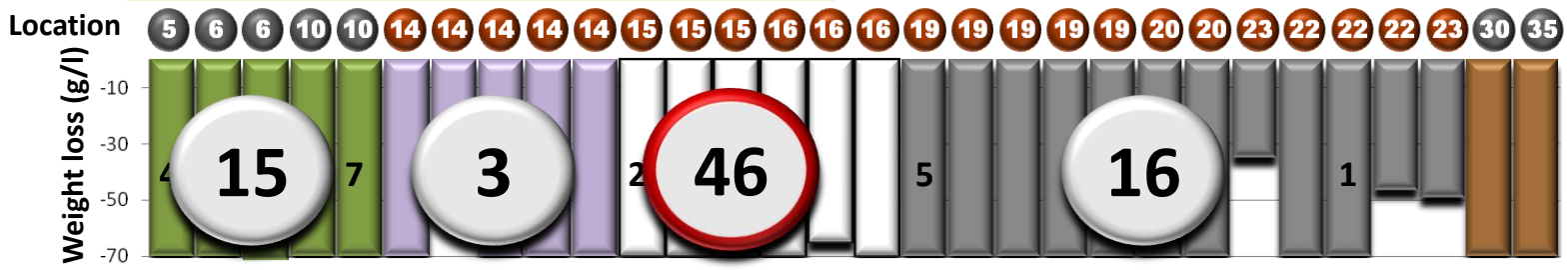
SAMPLES OF HYBRID VARIETIES FROM ABANDONED VINEYARDS



RESULTS

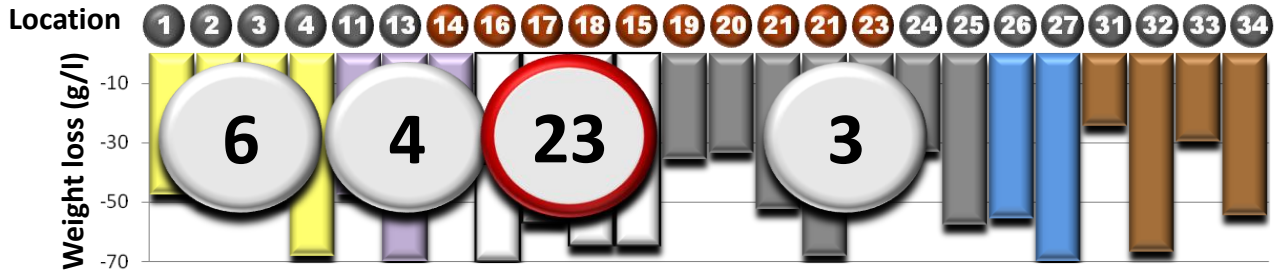
Number of *S. cerevisiae* strains from each island

SAMPLES OF TRADITIONAL VARIETIES



SAMPLES OF HYBRID VARIETIES FROM NON-ABANDONED VINEYARDS

SAMPLES OF HYBRID VARIETIES FROM ABANDONED VINEYARDS



CONCLUSIONS

- The vineyards of the Azores islands harbor a high genetic diversity of *S. cerevisiae* strains;
- In abandoned vineyards, this species occurred with a lower genetic diversity, but a greater abundance or capacity to predominate in spontaneous must fermentations;
- The ocurrence of non-*Saccharomyces* species depended on the type of vineyard and the grape variety (traditional or hybrid);
- Vineyard ecosystems from the Graciosa island harbor the highest number of *S. cerevisiae* strains, probably associated with the large extension of vineyards on this island;

ACKNOWLEDGMENTS

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• “Serviços de Desenvolvimento Agrário dos Açores”

• Numerous wine producers